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*Eleventh Contribution to the Herpetology of Tropical America.**By E. D. Cope.**(Read before the American Philosophical Society, June 20th, 1879.)*

The materials studied in the preparation of the present paper, are the following :

1. A collection made at Batopilas in Southern Chihuahua, by Edward Wilkinson, Jr.
2. Two collections made at Guanajuato on the Mexican Plateau, by Dr. Alfredo Dugés.
3. A collection from the Isthmus of Tehuantepec, by Francis Sumichrast.
4. A collection made in Costa Rica from Jose Zelodon.
5. Three collections from the Island of Santo Domingo, made by Messrs. Wm. M. Gabb and Charles A. Fraser and Dr. J. J. Brown.
6. A collection from the Island of Dominica, made by Ferdinand Ober.
7. A collection from the Island of Tobago, also from Ferd. Ober.
8. A few specimens from North west Bolivia, from the late Prof. James Orton.

Of these, all excepting Nos. 1 and 8, and a part of No. 2, belong to the Smithsonian Institution, and have been placed in my hands for identification, by Professor Baird, the Secretary.

No. I. BATOPILAS, Wilkinson.

Batopilas is a mining town of Chihuahua, in a region celebrated for the extent and richness of its silver deposits. It is on the western side of the water shed of the Cordilleras on the upper waters of a tributary of the Rio Fuerte, which forms in the lower part of its course the boundary dividing the States of Sonora and Cinaloa. The surrounding country is mountainous and dry.

This locality is one of especial interest in its relations to the faunal districts of the adjacent parts of Mexico and the United States. The absence of *Batrachia* and Turtles from Mr. Wilkinson's collection shows its similarity to the elevated regions north and south of it.

LACERTILIA.

1. *Anolis nebulosus* Wieg.
2. *Cyclura acanthura* Wieg.
3. *Uta bicarinata* Dum.
4. *Sceloporus tristichus* Cope. Report U. S. G. G. Survey W. of 100th Mer. G. M. Wheeler, Vol. III, p. 571.
5. *Sceloporus clarkii* Bd. Gird.
6. *Phrynosoma cornutum* Harl.
7. *Phyllodactylus tuberculosus* Wieg.
8. *Cnemidophorus communis* Cope, Var. II. Proceedings American Philosophical Society, 1877, p. 95.

OPHIDIA.

9. *Stenostoma humile* B. & G.

10. *Procinura æmula* Cope, gen. et. sp. nov.

Char. gen. Dentition opisthoglyph. Form that of *Elapomorphus*. Two nasal, one loreal, and one preocular plates; internasals and prefrontals distinct. Scales smooth, excepting those of the posterior dorsal and caudal regions, where they are keeled, those of the latter so much so as to be tubercular. Anal plate double.

This genus is near to *Scolecophis* Cope, but the peculiar tubercular carination of the tail distinguishes it. The only known species inhabits a rocky, mountainous region, and I have little doubt that this peculiar character enables the animal to force itself into the earth or beneath stones. The tail is used as a fulcrum in pushing against rough and resistant bodies.

Char. specif. Scales broad rounded, in fifteen longitudinal series, the median rows rather smaller than the lateral, of which three rows are equal. Muzzle projecting beyond the mandible, rounded, the rostral plate visible from above, presenting an obtuse angle posteriorly. Top of head flat. Prefrontals much wider than long, their external canthal border equal to that of the internasals. Frontal wide, sending a long angle backwards. Parietals short, wide; temporals 1-2, the first small, as deep as long. Superior labials seven, all except the first, deeper than long, the third and fourth entering the orbit. Preorbital vertical, narrow, not reaching frontal; postorbitals two, equal and small. Loreal quadrangular. Inferior labials eight, fourth largest; pregeniæ three times as long as postgeniæ and separated from gastrosteges by six rows of scales. The dorsal carinæ first appear on the twenty-second transverse row of scales anterior to the vent and occupy the median nine series. All the caudal series are keeled, and as they are wider than long, the free apices of the keels projecting, give them a depressed pyramidal form, Gastrosteges 148; urosteges 41.

In the coloration of the body this species is an almost exact repetition of the *Elaps fulvius*. It is surrounded by wide black rings, which are broadly bordered with yellow, and separated by red interspaces of twice their width. The scales of the red spaces have each a central black spot which are more distinct than in *E. fulvius*, on the anterior part of the body above the sides; posteriorly they are weaker. The black annuli pass round the belly, but all are somewhat broken anteriorly. Between them the gastrosteges have black shades. The coloration of the head differs from that of the *E. fulvius* in having merely a large black spot covering the parietal, superciliary and frontal plates, and extending round the eye but not reaching the edge of the lip. Muzzle and chin unspotted.

Total length, M. .364; length of rictus oris, .011; length of tail, .061.

Although this curious and handsome serpent so much resembles the *Elaps fulvius*, it is not yet known that the two species inhabit the same region.

11. *Phimothyra grahamiæ* B. & G., numerous specimens.

12. *Eutania sirtalis* Linn. variety near the sub-species *ordinata*, having

the dorsal and lateral bands and lateral dark spots, obsolete. General color bright olive.

13. *Eutania cyrtopsis* Kenn.
14. *Trimorphodon upsilon* Cope.
15. *Elaps euryxanthus* Kenn.

REMARKS.

This collection, though small, is of interest as serving to fix the extension of the Sonoran fauna to a point further south than has been hitherto practicable. The following are the faunal affinities of the fourteen species enumerated above. *Eutania sirtalis* may be dismissed as common to Mexico and the Nearctic Realm; *Procinura amula* may also be passed by as peculiar to the locality investigated, so far as yet known. *Stenostoma humile*, is, according to Baird and Girard, an inhabitant of the Pacific district, and is a very rare species. Species found in various parts of Mexico are: *Anolis nebulosus*, *Cyclura acanthura* and *Onemidophorus communis*; the last occurring also in S. W. Texas. *Trimorphodon upsilon* is a species of West Mexico, having been found at Guadalajara, Guanajuato, and the present locality; but is not as yet known from the West Coast. Six species are exclusively of the Sonoran district viz: *Sceloporus tristychus*; *S. clarki*, *Phimothyra grahamiæ*; *Eutania cyrtopsis* and *Elaps euryxanthus*. *Phyllodactylus tuberculosus* belongs to the Sonoran fauna, but occurs also south of Batopilas in Western Mexico. *Phrynosoma cornutum* is also Sonoran, but is Texan besides. The comparison of this list so far as it relates to the Mexican fauna, is with that of the Tableland; only two species of it, occurring in the Tierra Caliente also; these are the generally distributed *Cyclura acanthura* and *Onemidophorus communis*.

Mr. Wilkinson's collection contained a specimen of *Pelamis bicolor*, which he informs me was taken in the Gulf of California near Guaymas.

In the Proceedings of the Philadelphia Academy for 1868, p. 310, I noted that William Bischoff had sent to the Smithsonian Institution from Mazatlan the species *Agalychnis dacnicolor* Cope, *Leptodira personata* Cope, *Leptodira pacifica* Cope, and a species of *Holbrookia*, which I named *H. bischoffi*, but did not describe. Since then it has been described under the name of *H. elegans* by Bocourt (Mission Scientifique de Mexique 1874, p. 164), which name it must retain. I add to this list *Bufo debilis* Girard, which gives the extreme western limit of its range. It occurs also in West Texas.

II. GUANAJUATO, Duges.

One collection from this locality was sent me by Dr. Duges, and another collection was subsequently received by the Smithsonian Institution. I give the catalogue numbers of the specimens contained in the latter.

BATRACHIA.

1. *Spelerpes belli* Gray.
2. *Bufo punctatus* B. and G.
3. *Bufo intermedius* Günth.
4. *Bufo monksiæ* Cope, sp. nov.

Cranium without any crests, superior borders of orbits not reverted, can-

thus rostralis sharp, lores perpendicular, muzzle vertically descending to lip. Tympanic disc concealed, parotoid gland a wide oval, and rather large. Fingers moderate, first and second equal, fourth longer. Heel of extended posterior limb reaching posterior border of orbit. Web of toes measuring half the length of the shorter. Skin rough with small harsh tubercles, which are more remote on the back, but are closely appressed on all the inferior surfaces. They are especially acute on the limbs. There are two distinct tarsal tubercles, which are prominent, though small and without cutting edge.

Color above, blackish-brown with a few small ashen spots, and an ashen cross band extending across the eyelids and intervening frontal space. Lores and lips brown spotted; blackish spots on the sides, belly, throat and limbs.

Length of head and body, M. .035; axial length of head to angle of mandible, .010; width of head at angle of mandible, .012; length of hind limb, .042; length of hind foot, .020. No. 9896.

This is one of the few Mexican species without cranial crests, resembling in this respect, the *B. compactilis*; * *B. hamatiticus*, and *B. politus*. From the first it differs in the absence of the fossorial spur; from the last two in the roughness of the skin, and the degree of palmation of the feet; the acute canthus rostralis distinguishes it from the *B. politus*. I dedicate it to my friend Miss Sarah P. Monks, of Cold Spring, New York, who has paid especial attention to the cold blooded vertebrata of North America.

5. *Spea hammondi* Baird.

Several specimens. This species was also brought from Chihuahua by John Potts, so that its range is shown to be wide. Nos. 9881, 4-5, 9915.

6. *Hyla eximia* Baird. Nos. 9875, 9898.

7. *Hyla arenicolor* Cope. Nos. 9897, 9916.

8. *Malachylodes guttillatus*, gen. et sp. nov.

Char. gen. Mostly like *Syrrhophus* and *Phyllobates*, but with a frontoparietal fontanelle as in *Liuperus*. Nasal bones wide, in contact on the middle line. Vomerine teeth none. Toes free, no tarsal spurs.

This new genus is of interest as exhibiting the lowest station in the series which is typified by *Hylodes*, excepting that the nasal bones are not so reduced as in the type of *Phyllobates*. The presence of the fontanelle places it nearer to *Hylorhina* than any other of this group, and allies it to the *Liuperine* division; but its xiphisternum is a thin cartilaginous plate, and the terminal phalanges support a transverse piece as in the *Hylodinae*.

Char. specif. Head flat and rather wide, with an oval muzzle. Canthus rostralis not well marked. Eye not prominent nor large, its diameter equal distance from its anterior border to the nostril. Muzzle not overhanging. The heel reaches the posterior border of the orbit, and the wrist reaches the end of the muzzle. The foot is rather short, and the terminal dilations are small. Tarsal tubercles insignificant. Skin without folds, smooth, except some small tubercles on the eyelids, and a trace of areolation on the posterior part of the sides and abdomen.

* *B. levifrons* Brocchi; Bullet. Société Philomathique, Paris, 1877, 13 (Extract).

Color above dark mulberry-brown with numerous, very faint small pale spots. On the sides the ground color becomes paler, and the light spots much more distinct. Limbs banded with rufous. Lower surfaces uniform yellowish.

Length of head and body, .022; of head to angle of jaws, .007; width of head at angle, .009; length of hind limb, .030; length of hind foot, .014. No. 9898.

This species has some resemblance to the *Syrrhophus leprus* from Tehuantepec.

9. *Cystignathus microtis*, sp. nov.

Like all the Mexican species of this genus, this one has short series of vomerine teeth behind the posterior nares, and a discoidal fold of the abdominal integument. It differs from the *C. melanonotus* Hallow, in not having a dermal margin of the posterior digits. The dorsal skin does not present any glandular folds such as occur in *C. labialis* and *C. gracilis*. The muzzle is not elongate, and is convex in transverse section, the canthus rostralis being absent. The limbs are very stout, especially the femur, as in *C. melanonotus*, but not elongate, the heel only reaching the posterior border of the orbit. The eye is not large, and the tympanum's diameter is only two-fifths of its length, a characteristic peculiarity of the species.

Color above dark brown, with a blackish pale edged triangle between the eyes, with its apex directed posteriorly. A dark light edged spot below the front of the orbit. Tympanum and a streak behind it, blackish. No light stripe on the upper lip. Belly dirty white gray, marbled anteriorly. Throat dark brown; limbs light brown below.

Length of head and body, .028; length of hind leg, .038; length of hind foot, .020; length of head, .009; width of head behind, .009.

Three specimens. Nos. 9906, 9908-9.

10. *Rana montezumæ* Bd. No. 9891.

11. *Rana halecina* Kahn. var. No. 9900.

LACERTILIA.

12. *Sceloporus dugesi* Bocourt. Nos. 9886, 9893, 9904-5.

13. *Sceloporus formosus* Wieg. var. Nos. 9876, 9878.

14. *Sceloporus torquatus* Wieg. var. 9877.

15. *Sceloporus spinosus* Wieg. Eupatario.

16. *Sceloporus grammicus* Wieg. Eupatario.

17. *Holbrookia maculata* B. and G.; sub-species *approximans* Baird. This is the Mexican form of *H. maculata*, and has not been found within the limits of the United States. Nos. 9894, 9903.

18. *Cnemidophorus communis* Cope. Nos. 9879, 9882-7, 9901-2.

OPHIDIA.

CONOPSIS NASUS Gthr.

19. *Ogmis varians* Jan. (*Oxyrhina*) *Ogmis* Cope, Proceed. Amer. Philos. Soc. 1869, p. 162. No. 9913.

20. *Adelophis copei* Duges MS., gen. et sp. nov.

Char. gen. Allied to *Tropidoclonium*. Scales keeled; anal single;

caudal scutella two-rowed. Teeth equal. Cephalic shields normal. Nasals distinct, and separated by a space from the single preocular, which is occupied by the prefrontal, since the loreal is wanting. Head little distinct from body. Rostral plate not produced. The absence of loreal plate is the only character that separates this genus from *Tropidoclonium*.

Char. specif. Total length, 33 centimetres; tail very acute and terminating in a cone; length of tail, M.0.066. Cephalic scales convex; dorsals and supra-caudals carinate, those on the flanks smooth. Urosteges divided; a single preanal. A single preocular and two post-oculars; temporals three (1 + 2). Superior labials five, the first in contact with the two nasals and the rostral; the second is in contact with the posterior nasal and fronto-nasal; the third is in contact with the fronto-nasal, the preocular and the eye; the fourth is in contact with the eye and the inferior post-ocular; the fifth and largest is in contact with the inferior post-ocular, the first temporal and the inferior temporal of the second row. There are two nasals; the nostril piercing the posterior border of the anterior one. The rostral projects very slightly above the level of the muzzle. No frenal, the fronto-nasals extending on the sides till in contact with the superior labials. The internasals are small, triangular. The frontal or vertical is much longer than wide, and is six-sided. Palpebrals (supra-oculars) are elongated, straight; occipitals large. Five inferior labials on each side, and a small mental. Four elongate inframaxillaries, the extremity of the posterior ones angulated and separated by two small gulars. Three rows of gulars on each side.

I have counted fifteen dorsal rows of scales longitudinally; the rows in contact with the gastosteges the largest and smooth, those on the back and upper side of tail carinated, rhombic and truncated (emarginate) at their extremities. The preanal is undivided.

On the middle of the back there is a yellowish line extending from the occiput to the commencement of the tail, which embraces two rows of scales. On each side of this line a chestnut-brown band of the same width as the former, which is bordered below by a black line; the line is lost in the tail, and behind the eye it forms an elongate black spot. The flanks and belly are light brown; there is a black line on the posterior margin of each of the scales in contact with the gastosteges; towards the tail they disappear. The upper side of the head is chestnut and the lips are like the flanks in color, very yellow.

Habitat, Guadalajara, Mexico.

21. *Phimothyrus bairdi* Jan., 1883.

22. *Lytorhynchus mexicanus* D. & B. *Zamenis* D. & B. Eupatario.

23. *Bascanium teniatum laterale* Hallow.

24. *Eutænia cyrtopsis* Kenn., 1892.

25. *Eutænia sirtalis* Linn., 1759.

26. *Hypsigena ochrorhynchus* Cope, 1869.

27. *Trimorphodon upsilon* Cope, 1861-12.

Elaps fulvius L.

28. *Crotalus polystictus* Cope. *C. triseriatus* Jan. nec. Wagler. *C. ximenesii* Dugés.

REMARKS.

Points of interest in geographical distribution, indicated by the collection of Dr. Dugés, are the following: The species of the above list which belong distinctively to the Sonoran district fauna are five, viz: *Bufo punctatus*, *Hyla arenicolor*, *Spea hammondi*, *Eutania cyrtopsis*, *Hypsigena ochrorhynchus*. Besides these genera, the following belong to the Nearctic Realm, and not to the Neotropical: *Rana*, *Sceloporus*, *Holbrookia*, *Phimothya*, *Bascanium*. *Cystignathus* is the only Neotropical genus; while *Malachyloides*, *Ogmis*, *Canopsis* and *Trimorphodon* are especially Mexican.

I add that Dr. Dugés has sent *Hypopachus variolosus* Cope, from the State of Guadalajara, a species heretofore only known as Costa Rican.

III. TEHUANTEPEC, Sumichrast.

A list of species from this locality and collector was published in the Proceedings American Philosophical Society for 1869, p. 161. Since that date a number of collections have been sent by Mr. Sumichrast, which add materially to our knowledge of the distribution of the Batrachia and Reptilia of the district of Mexico properly so called. I append Mr. Sumichrast's notes.

BATRACHIA.

1. *Edipus rufescens* Cope, 10042 (15). Heretofore only known from Vera Cruz. Found in tufts of *Tillandsia*.
2. *Edipus carbonarius carbonarius* Cope.
2. *Edipus carbonarius salvini* Gray.
3. *Siphonops mexicanus* D. & B.
4. *Bufo aqua* Daud.
5. *Bufo sternosignatus* Gthr., 10014 (No. 2). Only found in the beginning of the rainy season breeding in pools.
6. *Bufo canaliferus* Cope, 10015, 10022 (No. 3). Found in woods, and not seen in pools at the breeding season.
7. *Bufo coccifer* Cope.
8. *Bufo valliceps* Wieg., 10013 (No. 1).
9. *Microphryne pustulosa* Cope, 10023-8.
10. *Engystoma ustum* Cope, 10021.
11. *Rhinophrynus dorsalis* D. & B.
12. *Hyla miotympanum* Cope.
13. *Smilisca baudini* D. & B., 10016 (No. 4). Abundant, but only seen in the rainy season, when it comes to pools, lagoons, etc., to breed.
14. *Hylella platycephala*, sp. nov.

This species conforms to the characters of the genus *Hylella*, as I understand them, viz: in the general structure of *Hyla*, including fronto-parietal fontanelle and narrow divergent nasal bones, but wanting vomerine teeth.

The present species is not large and has elongate hind limbs, the heel reaching the middle of the orbit. The sole of the hinder foot is rather

short; not exceeding the length of the astragalus more than the fifth of its own length. The digital dilatations are well developed on both extremities; the posterior digits are two-thirds webbed, while the anterior are scarcely one-fourth palmate. The species is particularly characterized by the abbreviation and flatness of the head, which is also wide. The canthus rostrales are distinct and very convergent; the muzzle is truncate vertically, but projects a little beyond the mandible. The nostrils are terminal and lateral, and are as far anterior to the eye as the long diameter of the latter. The latter dimension is four times the diameter of the tympanum, and is equal to the interorbital width. The skin of the superior surface is everywhere smooth. The thorax, belly and inferior face of part of femora are areolate.

The color in spirits is light ashen above, rather darker on the head. Canthus rostralis dark shaded. Inferior surfaces light orange. No markings on the sides or concealed faces of the limbs, nor on the superior faces of the limbs.

Length of head and body, .033; length of head to angle of jaws, axially, .007; width of head posteriorly, .011; length of fore limb, .015; of hind limb, .045; of hind foot, .019.

This is the first of the genus detected in the Mexican district. It is larger than the *H. carnea* Cope, of Brazil, has a weaker palmation of the fingers, and more uniform coloration.

From Japana, from an elevation of from 2000 to 3000 feet. It is found in the tufts of epiphytic *Tillandsia* and *M. Sumichrast* thinks it undergoes its metamorphoses there, in rain-water held in the axils of the leaves.

15. *Lithodytes rhodopsis* Cope, 10020 (No. 8).

16. *Lithodytes podiciferus* Cope.

17. *Syrrhophus leprus*, sp. nov.

The genus *Syrrhophus* was proposed by me in 1878* to receive frogs allied to *Phyllobates*, but with largely developed nasal bones, which meet on the middle line, as in *Hylodes*, thus covering the ethmoid cartilage. The typical species is the *S. marnochii* of West Texas; a second species is the *S. cystignathoides* Cope,† and the present frog increases the number to three. These species are distinguished as follows:

Posterior limbs short, heel to tympanum; head wide; tympanum half orbit; rufous, brown spotted *S. marnochii*.
 Posterior limbs longer, heel to front of orbit; head wide, a canthus rostralis; tympanum one-third orbit; brown, pale spotted..... *S. leprus*.
 Posterior limbs longer, heel to front of orbit; head narrow, no canthus rostralis; tympanum one-third orbit; brown, dark spotted,
S. cystignathoides.

In the *S. leprus* the muzzle is broadly acuminate and obtuse, with vertical profile; nares lateral and terminal, and as far from the orbit as the diameter of the latter. Lores vertical. Eye not prominent upwards.

* American Naturalist, p. 253.

† *Phyllobates*, Proceed. Am. Philos. Soc., 1877, p. 89.

Choanæ and ostia pharyngea small and equal; tongue obpyriform and entire. The digital dilatations are small, and the inferior tubercles of the digits are well marked both anteriorly and posteriorly. A large palmar tubercle; solar tubercles weak. The hind foot is rather slender, the solar part equaling the tibia in length. Skin everywhere smooth.

All the superior surfaces, including limbs, a dark mulberry-brown, dotted with moderately large gray spots; below a pale pinkish-brown (in spirits), without markings. Lores and upper lip like the back.

Length of head and body, .024; of head to angle of jaws (axial), .008; width of head at angle of jaws, .009; length of hind limb, .035; of hind foot, .010.

From Santa Efigenia. No. 10040 (No. 14). Found in woods. According to Mr. Sumichrast, the dorsal spots are yellow in life.

18. *Cystignathus melanonotus* Hallow.

19. *Cystignathus perlævis*, sp. nov.

The species of this genus are numerous, and difficult to distinguish. They fall naturally into groups defined by the form of the series of vomerine teeth, and the presence or absence of a discoidal fold of the abdominal integument, and of membranous margins to the posterior digits. The latter character does not suffice for the discrimination of a genus, hence I regard *Tarsopterus* R. & L. as synonymous with *Cystignathus*.

The species of the Mexican district of the Neotropical Realm all have a discoidal abdominal fold, and the vomerine teeth in short transverse series behind the line of the posterior boundary of the choanæ. I know but one species which has dermal digital margins. The species are distinguished as follows. I premise that the presence or absence of spots is not constant among them:

I. Posterior digits with dermal margins.

Dermal glandular folds numerous, generally broken up; legs stout, heel reaching orbit; tympanic membrane .66 of eye; no light stripe on lip *C. melanonotus*.

II. No digital dermal margins.

No glandular folds; legs slender, heel reaching front of orbit; tympanum .66 of orbit; no light lip stripe *C. perlævis*.

Glandular folds (?) none; legs very robust; heel reaching orbit; tympanum .4 of orbit; no stripe on lip *C. microtis*.

Glandular folds present; legs short, reaching orbit; tympanum equal orbit; lip stripe imperfect *C. gracilis*.

Glandular folds; legs long, reaching front of orbit; tympanum .6 of orbit; a lip stripe *C. labialis*.

The *C. perlævis* is characterized by its exceedingly smooth and shining skin, which is entirely without the glandular ridges usual in the genus. The head is angular oval in outline with distinct canthus rostrales, which are near together, and much within the labial outline. The muzzle projects a little, and the nares are about one-third the distance from its apex to the orbit. Tongue a longitudinal oval, entire behind; choanæ rather

small and equal to the ostia pharyngea. The vomerine series are well separated from each other and extend but little external to the inner border of the nares. Vertical diameter of tympanic disc a little less than the horizontal. Second and fourth fingers equal; the first a little longer. The posterior foot is slender, and the solar portion is as long as the tibia and half of the astragalus. Solar tubercles insignificant.

Dark ashen gray above, sides blackish above, speckled with white and blackish below. An interorbital dark spot; upper lip marbled; posterior face of femora dark, with light specks. Below white, the sides gray marbled. Throat gray, white spotted. Posterior limbs obscurely cross-banded above.

Length of head and body, .038; of head axially to angle of jaws, .014; width at latter point, .0135; length of hind limb, .055; of hind foot, .028.

Taken from a well near Japana. 10041. (No. 16, F. S.)

20. *Cystignathus gracilis* D. B. 10018-9. (No. 6-7.) Found under old logs and stones, near water.

21. *Cystignathus labialis* Cope, Proceeds. Amer. Philos. Soc. 1877, p. 90.

The original description of this species was taken from young specimens in which the posterior limbs are not as long as in adults. Numerous specimens from Tehuantepec, which fix the characters and locality. There are also three specimens sent by M. Sumichrast, from Potrero, near Cordova, Vera Cruz.

22. *Ranula affinis* Pet. (No. 5, F. S.) Rather common in pools and rivulets. It grows to a large size, when the dorsal markings become obsolete.

Rana halecina Kahm, var. with indistinct dorsal spots.

Some varieties of this species from its extreme southern range, look quite different from the typical form. The dorsal green becomes more vivid, and has sometimes a blue shade on the head. The spots become obscure, and there is a general resemblance to the *Ranula affinis*. It may be distinguished from that frog by the less palmation of the toes, which are without apical callosities, and by the presence of dermal folds between the dorso-laterals, although these are sometimes faint. The most aberrant examples come from Coban, Vera Paz.

LACERTILIA.

24. *Epapheus sumichrasti* Cope.

25. *Mococa assata* Cope.

26. *Celestus chalybeus* Cope.

27. *Cnemidophorus microlepidopus* Cope, Proceed. Amer. Philos. Soc. 1877, p. 93.

28. *Cnemidophorus unicolor* Cope, l. c. 93.

29. *Cnemidophorus immutabilis* Cope, l. c. 93.

30. *Cnemidophorus lativittis* Cope, l. c. p. 94.

31. *Amiva undulata* Wiegmann.

32. *Lepidophyma smithii* Bocourt.

OPHIDIA.

33. *Stenostoma phænops* Cope, Journal Academy Philadelphia, 1875, p. 128.
34. *Loxocemus bicolor* Cope.
35. *Geagras redimitus* Cope, Journal Academy Phila., 1875, p. 141.
36. *Ficimia olivacea* Gray.
37. *Tantilla rubra* Cope, loc. sup. cit. 144.
38. *Conophis sumichrasti* Cope, loc. cit. 137.
39. *Coniophanes proterops* Cope, l. c. 138.
40. *Coniophanes jissidens* Gthr. l. c. 138.
41. *Spilotes corais melanurus* D. and B.
42. *Bascanium mentosurium* D. and B.
43. *Leptophis diplotropis* Gthr.
44. *Dryophis fulgidus* Daud.
45. *Himantodes cenchoa* L.
46. *Oxyrrhopus clelia* L.

REMARKS.

This catalogue represents a part of the Mexican fauna properly so-called. There is not a single non-Neotropical genus excepting *Rana* and *Bascanium*. Of the remaining thirty genera, fifteen are characteristically Neotropical; twelve are peculiarly Mexican, two are cosmopolitan or nearly so, and one (*Celestus*) is West Indian.

IV. COSTA RICA, Zeledon.

This collection includes a number of species which I have named in my monograph on the Herpetology of Costa Rica,* with some additional ones. I now give the names of the latter only, enumerating them from the end of my former list.

3. *Edipus morio* Cope. Inserted in the essay above cited as doubtfully occurring in Costa Rica. From Cartago on the Plateau.

45. *Coleonyx elegans* Gray. Inserted in my list on the authority of Peters. Zeledon's collection contains fine specimens, which he states were found in ant hills on the table land near San José.

131. *Scolecophis zonatus* Hallow.

132. *Coluber triaspis* Cope. The Plateau near San José. The most southern locality for this species and genus.

133. *Porthidium nasutum* Bocourt.

From Limon, on the East Coast. This species is very near the *Bothriopsis proboscideus* Cope, and may not prove to be distinct from it. In the latter there are two nasal plates, the supranasals are longer, more concave on the external edge, and more widely separated than in *P. nasutum*, and the frontal scales are carinate. They are smooth, or nearly so, in Mr. Zeledon's specimen, which also has the rostral plate a little shorter than in the *B. proboscideus*. The specimens of the latter are smaller than the single *P. nasutum*. It is questionable whether a large series will sustain

*Journal Academy Philadelphia, 1875, 93.

these characters. In *P. nasutum* the scuta are, 136-27; in *B. proboscideus*, 132-31.

V. SAN DOMINGO, Drs. Brown, Fraser and Gabb.

A few of the species of the collection made by Dr. Brown are from the Island of Gonave, off the West Coast of Santo Domingo; the others are from near Port-au-Prince.

BATRACHIA.

1. *Trachycephalus marmoratus* D. and B., Fraser and Gabb. Puerto Plata.
2. *Hylodes martinicensis* D. and B., Gabb and Fraser.

LACERTILIA.

3. *Celestus rugosus*, sp. nov.

Scales in thirty-six longitudinal rows; each with a strong median keel, and seven or eight weaker ones on each side of it, making fifteen or seventeen in all. The median keels are strong and continuous from the nape, becoming stronger posteriorly, especially on the tail, whose superior and lateral surfaces are thus thrown into gutters. In the specimen the distal part of the tail is lost. The keels form oblique lines over the sides; they are strong on the hinder and weaker on the anterior limbs.

The general form is slender, and the limbs are quite weak; the latter when extended along the side fail to meet by the length of the posterior foot and leg to the knee. The head is flat and rather elongate, and its scuta are normal. There are nine superior labials, of which the eighth is the first one angulated above. Both the loreals are rather higher than long. Five supraorbitals, the posterior separated by two scales from the parietal. Interparietal large as parietal; a large post-interparietal. Five pairs of large infralabials, which are separated from the labials by scales.

Ground color gray; no longitudinal lines, but the nape and back are crossed by seventeen brown cross-bars, which are nearly in contact medially, and taper to disappearance on the upper part of the side. Their dorsal portions are sometimes confluent longitudinally. A series of faint dusted brown spots on the inferior part of the sides. Below, white, with a few scales here and there brown. Limbs brown above.

Length from end of muzzle to vent three and a half inches; from do. to middle of auricular meatus five-eighths of an inch; from do. to axilla one and five-eighths inch.

From Puerto Plata, Santo Domingo. Charles A. Fraser. No. 10260.

This species is quite distinct from those previously known in both squamation and color.

4. *Celestus stenurus* Cope, var. Proceedings Academy, Philadelphia, 1868, p. 126. Puerto Plata. Fraser.

5. *Celestus phoxinus* Cope, Gabb.

6. *Sphaerodactylus alopex* Cope, Fraser.

7. *Anolis celestinus* Cope, Gabb.

8. *Anolis semilineatus* Cope, Gabb.
9. *Anolis cybotes* Cope, Gabb and Fraser.
10. *Anolis distichus* Cope, Gabb, Fraser. Puerto Plata.
11. *Liocephalus trigeminatus* Cope, Fraser. Puerto Plata.
Eupristis ricardii D. & B., Gabb and Fraser.
Amphisbæna innocens Weinl., Gonave Island, Brown.

OPHIDIA.

12. *Typhlops lumbricalis* D. B. Puerto Plata. Fraser.
13. *Ungualia hatiana*, sp. nov.

Scales in twenty-seven rows, entirely smooth. Body stout, head not distinct, tapering; eye small, its diameter less than one-third the length of the muzzle in front of it. Internasals longer than wide; internasofrontals and prefrontals much wider than long. Parietals as long as frontal, in contact medially. Superior labials 9-10; only those in front of the orbit higher than long. Oculars 1-3, fourth and fifth labials entering orbit. Gastrosteges 192; urosteges 32.

Color brownish-ashen above, with four rows of alternating round blackish brown spots, of which the median are larger and become confluent at some parts of the body. Another row of dark spots on the inferior part of the side, which are separated by yellowish scales. An additional row of larger spots alternating with these involve the ends of the gastrosteges, and may or may not meet across the middle line of the abdomen.

Total length, .680; of rictus oris, .017; of the tail, .075.

This, the largest species of the genus, much resembles the *U. maculata* of Cuba, etc., but it has a larger number of scales, and also exceeds it materially in the number of gastrosteges. Its smooth scales distinguish it from the *U. melanura* and *U. pardalis*.

From Port-au-Prince and Gonave Island, Dr. Brown. No. 10164. Puerto Plata. Fraser.

14. *Homolochilus striatus* Fisch. Fraser.
15. *Dromicus parvifrons* Cope, Gabb. Puerto Plata. Fraser. A variety was found on Gonave by Dr. Brown. In two specimens the ground color is black, and the belly is white; a light olive color extends on the sides as far as the third row of scales. Belly not spotted as in the usual variety.

16. *Hypsirhynchus ferox* Günther.

Dr. Brown, Port-au-Prince. These specimens agree exactly with Dr. Günther's description, and differ from the *H. scalaris* Cope, in the presence of a loreal plate and the triangular form of the dorsal spots. Although I have united these supposed species, I now incline to believe them distinct.

17. *Jaltris dorsalis* Güth., Gabb.
18. *Leptophis catesbeyi* D. and B., Gabb. Puerto Plata. Fraser.
19. *Leptophis oxyrhynchus* D. and B., Brown.

CROCODILIA.

20. *Crocodilus americanus* Seba, Fraser. Puerto Plata.

VI. DOMINICA, Ober.

As no study of the herpetology of this island has been made, the following list of five species partially supplies a deficiency in our knowledge.

1. *Mabuia cepedei* Gray.

2. *Xiphosurus oculatus*, sp. nov.

Abdominal scales smooth, those of sides and back minute; two median dorsal rows a little larger, keeled, and elevated on a moderate simple dermal fold which extends to the head. Superciliary scales separated by one or two rows of scales, and widely removed by scales from the small occipital. Muzzle rather long, flat above; ridges not prominent, covered with large scales, and separated by a shallow concavity, which contains in front, four rows of smaller smooth scales. Six or seven loreal rows; three large infralabials, the first smaller than each symphyseal. Supraorbitals surrounded with granules, consisting of three inner scales the largest, five in the inner row smaller, and six in the external row the least, all nearly smooth. Occipital concavity not profound or sharply defined posteriorly. Scales of arm and posterior leg keeled. Caudal spines well developed in the male.

Color above brownish-ash, with numerous white spots which sometimes form vertical lateral bands, and a white band extending from above the axilla to the middle of the side or beyond. Above this band, on the anterior half of the side are two round black spots, each of which has a white spot in the center. A white band from upper lip to side of nape; lip brown spotted, inferior surfaces dirty white, face yellow posteriorly. Tail uniform.

Total length, .185; of head and body, .072; of head to angle of mandible, .021; width at latter point, .008; length of fore limb .032; of hinder limb, .055; of posterior foot, .025.

The animal which I suppose to be the male, generally has one row of scales between the superciliaries, while the female has two, and has no caudal crest. The color differs in being brown, without the lateral white band or black eye-spots. The white spots form vertical series on the sides. It is possible that this is a different species, but it is in general identical with what the female of the *X. oculatus* should be.

This species differs from its nearest ally, the *X. cristatellus*, in having the superciliary plates separated on the middle line, by the shallow occipital depression, the longer muzzle, and in coloration.

Evidently abundant on the island. Nos. 10139-48, 10150-1, 10153.

3. *Aporophis** *juliæ* sp. nov.

Resembles the *Ophiomorphus meleagris* Shaw (*Liophis merremii* D. and B.), but has the long tail of the genus *Aporophis*, this member entering the total length 3.4 times. Appropriately, the number of the urosteges is considerably in excess of that found in the longest tailed varieties of *O. meleagris*, where, according to Duméril and Bibron, they do not exceed 63. They here number 82, and the gastrosteges are 158.

The scales are in seventeen rows, and are rather wide, and are as in other species of *Aporophis*, poreless; nevertheless there are a few on the

*Cope, Proceed. Amer. Philos. Soc. 1877, p. 18. *Lygophis* olim.

sides posteriorly with a single apical pore. Rostral plate small, not produced; nasals subequal; loreal high as long; preocular not reaching frontal. Two postoculars; temporals 1+2+3; the first and second bounding the parietals large and subequal. Superior labials eight, fourth and fifth entering orbit. Inferior labials ten, six in contact with genieals. Pairs of genieals equal. Frontal with straight sides, longer than wide in front, equal occipital.

Ground color above black, each scale with a round yellow spot near the base, including the first row, and excepting a row on each side of the vertebral row, which is uniform black (with an occasional spot) for the posterior third of the body. A median dorsal black line on tail. Ground color of head above brownish-yellow; a black band through eye, which sends branches along the borders of the labials; a black spot on top of muzzle; a black cross band between eyes, and the greater part of each parietal plate black.

Total length, M. .640; tail, 190.

This handsome species is named for my daughter.

4. *Alsophis sibonius*, sp. nov.

This species does not conform exactly to the diagnosis of the genus *Alsophis*, which I gave in 1862,* since the tail is less than one-third the total length, not much exceeding one-fourth. It thus approaches *Liophis*, and the question of reference to one genus or the other is left to depend on the character of the scale pores. These have the full number common to the species of *Alsophis* and the ground Colubrine snakes generally, while in *Liophis* there is but one on each scale, as in many Coronelline and water snakes.

The physiognomy of the *A. sibonius* is much that of species of the *A. antillensis* type, but the coloration resembles that of the common South American *Sibon annulatum*. The scales are thin and are in nineteen longitudinal series. Gastrosteges 191; anal double; urosteges 118. Total length, .640 M.; tail, .200. Eight superior labials, the third, fourth and fifth entering the orbit, the part of the third contributing being small. The muzzle projects above and is obliquely truncate below; the rostral plate is flat and barely appears on the superior surface of the head. Postnasal higher than prenasal; loreal longer than high, the superior border straight, not angulate. Preocular not much elevated, not reaching the frontal. Postoculars small; temporals 2-2-4. The superior temporal of the first row larger than the others and in contact with the inferior postocular only. The inferior temporal adjoining it does not reach the postoculars, and is, in fact, a dismemberment of the seventh superior labial, which is, in consequence, reduced to a very small size. This arrangement is identical on both sides of the head. Inferior labials ten, six of which are in contact with the genieals; latter subequal. Top of head flat, and orbits not prominent. Lengths of internasals and prefrontals on median suture equal. Frontal longer than wide, the superciliary borders but little

* Proceedings Academy Philadelphia, February.

concave. Occipitals short and wide for the genus; each is bounded posteriorly by a single large temporal plate behind the anterior one on each side, which are only separated on the median line by a small scale.

The ground color in spirits is straw-color. The dorsal region, between the fourth row of scales on each side, is occupied by a series of large rounded brown spots, whose borders are almost in contact on the median line. There are forty-two between the nape and the vent. Occasionally two or more of them are confluent on the middle line. Below and between them the sides are brown shaded, the shade assuming the form of spots anteriorly. Head brown, with a pale spot on each side of the nape; a brown spot with darker borders passes from the muzzle through the eye, and joins the brown dorsal spot on the nape. All the colors become darker posteriorly. Inferior surface unspotted anteriorly; it is sparsely dusted with brown on the posterior half of the body, and the caudal scutellæ are dusted most densely along the middle line, forming a stripe.

No. 10138 Mus. Smithsonian.

VII. TOBAGO, Ober.

Amiva surinamensis tobaganus, sub-sp. nov.

A single *Amiva* from Tobago forms a strongly marked race of the common continental species, but whether separable as a species or not I am not yet able to state. It differs from the typical *A. surinamensis* in color, in a disposition to a somewhat greater subdivision of the scuta of the limbs and belly, and in the greater length of the posterior foot. There are twelve rows of abdominal scales at the middle, as is sometimes seen in *A. surinamensis*. The two inner rows of antebrachials extend to the wrist; only one row extends so far in *A. surinamensis*. Both brachial and postbrachial scales, as well as those of the gular fold are rather more numerous than in *A. surinamensis*. In the latter species the length of the posterior foot equals the distance from the axilla to the middle of the loreal plate; in the form *tobaganus* the foot is as long as from the axilla to the end of the muzzle.

Color olivaceous, with a black lateral band with undulating edges, which are not light bordered, but which are marked by small yellow spots at regular distances. Back with a chain-like series of black annuli on each side, each ring with an obscure yellow spot in its center. Sides black and yellow-spotted; below uniform straw-colored; head uniform brown, lips lighter.

No. 10113; size less than that of the adult *A. surinamensis*.

Anolis alligator D. and B.

Drymobius boddartii Seetzen.

Bothrops lanceolatus Merr. (Fer de lance.)

Scales in thirty-one and thirty-three longitudinal rows; colors pale, with the cross bands obscure, as in other West Indian specimens.

Hylodes martinicensis D. and B. No. 10121.

The Island of Tobago is, of the Lesser Antilles, the nearest to Trinidad,

Fig. 1.



Fig. 2.



Fig. 3.

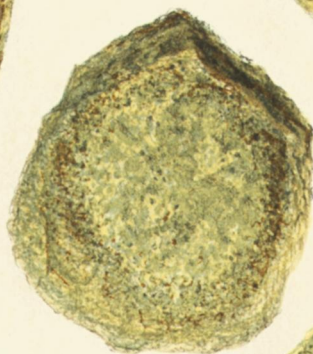


Fig. 4.



Fig. 5.



Fossils (?) from Lancaster County,
near the Maryland State Line.

and it might, on this account, be anticipated that its fauna would present a larger representation of continental types than the more northern islands of the series. That this is the case is shown by the present very limited list, which includes two Brazilian species of the genera *Amiva* and *Drymobius*. None of the species of the Dominica list were found on Tobago by Mr. Ober.

VIII. NORTHERN BOLIVIA, Orton.

Among the collections sent by Prof. Orton to Philadelphia before his departure for the Beni River, was a collection of reptiles from La Paz, on the eastern slope of the Andes, in Western Bolivia. This city, as is well known, is situated a short distance above the forest line, and enjoys a temperate climate.

In packing, some specimens from Puno, on Lake Titicaca, were mixed with those from La Paz. As reptiles are rare at that elevated locality it is probable that most of the species enumerated were derived from the latter place.

Bufo spinulosus Wieg.

Oxyrrhopus doliatus D. and B.

Aporophis tæniurus Tsch.

Bothrops microphthalmus Cope, Journal Academy Philadelphia, 1875, p. 182.

Scales in twenty-one longitudinal rows, all carinate excepting the first row, the keels not unusually prominent, and not reaching the apex of the scale. The second labial scute bounds the maxillary fossa in front, but it is partly cut off by suture on both sides.

In the above characters the single specimen of the collection differs from the type. The latter is large, the present individual is small, and the less development of the keels of the scales is perhaps due to immaturity. The scales on the top of the head are larger than in other species of the genus but not so large as in the type. The superciliaries are wide as in it, and there are only seven superior labials. The color of the inferior surface is, anteriorly, mixed black and gray, posteriorly black.

Fossil (?) Forms in the Quartzose Rocks of the Lower Susquehanna. By Persifor Frazer, Jr. With a plate.

(Read before the American Philosophical Society, April 4, 1879.)

The forms which accompany and illustrate this paper are found in a hard quartzose greenish rock, difficult to name, which forms part of the left border line of the great river in Cecil County, Maryland, just below the Pennsylvania line.

By a mistake (not the fault of the writer) in the title, the figures are given as from Lancaster county, Pennsylvania. In reality the discoverer of these curious and as yet unexplained phenomena, Dr. C. H. Stubbs, of Fulton